

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SEIKO EPSON CORP

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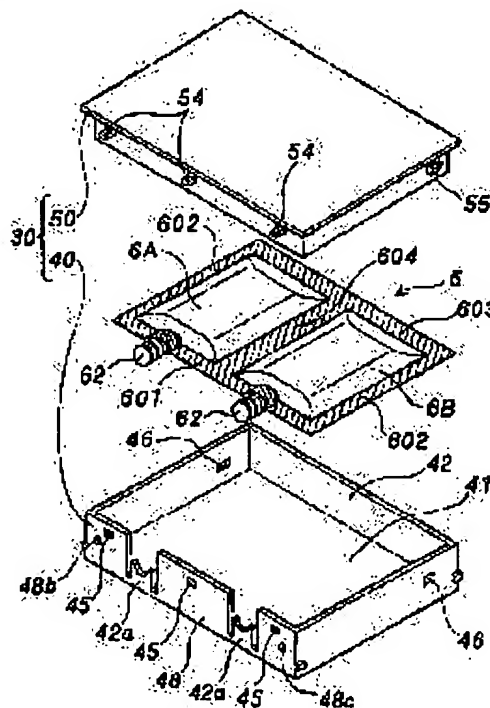
(72)Inventor : KOBAYASHI NAOKI

## (54) INK RESERVOIR, PRODUCTION THEREOF AND INK CARTRIDGE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an ink reservoir capable of easily locating a plurality of ink bags in a cartridge without complicating the shape of the cartridge and capable of certainly keeping the shapes of the ink bags thus located.

**SOLUTION:** Two square films superposed one upon another are fused along four sides 601, 602, 603 and further fused at least at one place 604 thereof other than four sides so as to be divided into a plurality of square portions. Plug members 62 are attached to a plurality of the ink bags 6A, 6B thus demarcated.



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## CLAIMS

[Claim(s)]

[Claim 1] In the ink stowage container for containing the ink used for an ink jet recording device In addition to four sides of the piled-up rectangle-like film of two sheets, so that the rectangle-like film concerned may be further divided in the shape of [ two or more ] a rectangle The ink stowage container characterized by having two or more ink bags by which partition formation was carried out by welding one place other than at least four sides, and the plug part material attached in each of the ink bag concerned.

[Claim 2] Said ink stowage container is an ink stowage container characterized by carrying out partition formation at two or more ink bags with which it filled up with the ink of two or more colors in claim 1.

[Claim 3] Said ink stowage container is an ink stowage container characterized by carrying out partition formation at three ink bags with which it filled up with the ink of yellow, a Magenta, and cyanogen in claim 2.

[Claim 4] Said ink stowage container is an ink stowage container characterized by carrying out partition formation at the ink bag with which it filled up with ink in claim 1, and the waste ink bag for collecting unnecessary ink.

[Claim 5] The ink cartridge characterized by preparing the installation hole which engages with said projection between the ink bags with which it is an ink cartridge using an ink stowage container according to claim 1 to 4, and has a case for containing said ink stowage container, and the projection for fixing said ink stowage container to said case, and said ink stowage container adjoins.

[Claim 6] In the condition of having inserted into one side of the film of two sheets which piled up two or more plug part material in the manufacture approach of the ink stowage container for containing the ink used for an ink jet recording device The process which welds one side of the film concerned and attaches said two or more plug part material in a film, The process which welds the film with which the plug part material concerned was attached, and carries out partition formation of the ink bag for every plug part material, The manufacture approach of the ink stowage container characterized by having the process which welds the film of this edge and closes each ink bag after filling up with the ink of a mutually different color two or more ink bags concerned by which partition formation was carried out, respectively.

## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to the stowage container which contains ink about an ink jet printer.

[0002]

[Description of the Prior Art] The ink jet recording device which forms a dot pattern is used for the sheet by making an ink droplet fly from two or more ink deliveries as one type of recording devices, such as a printer, facsimile, and a copy.

[0003] Generally the ink which is a record agent is supplied to an ink jet head through an ink supply pipe from the exchangeable ink cartridge set to the predetermined location of a recording apparatus. There are some which built the ink stowage container (ink bag) which sealed ink in the flexible bag which stuck the neighborhood of the laminate film which carried out the coat of the aluminum foil by resin etc. in such an ink cartridge. (For example, JP,63-35346,A)

In this case, it is constituted so that the ink in an ink bag may be supplied to an ink jet head through the ink supply way which plug part material penetrates a mounting eclipse and this plug part material in the state of closure to an ink bag, for example, is formed with a hollow needle etc.

[0004]

[Problem(s) to be Solved by the Invention] However, the technical problem was in the following points at such an ink stowage container. In the ink jet recording device which records a full color image, the ink bag with which it filled up with color ink, such as yellow, a Magenta, and cyanogen, was respectively built in the cartridge according to individual for every color. In this case, in order to have to provide for a printer side the tooth space in which only the number of cartridges holds a cartridge, it is disadvantageous at the point which miniaturizes a printer.

[0005] On the other hand, when these ink bags were collectively built in one cartridge, the bridge wall was established in the cartridge and each ink bag was contained with the position position for every chamber into which it was usually divided within the case of a cartridge. (For example, it is shown in drawing 5 of JP,63-35346,A.) If this is faced carrying out receipt maintenance of the flexible ink bag into the case of KATORIJI and positioning and configuration maintenance of this ink bag are not ensured, it is because there is a possibility of the internal pressure change in an ink bag becoming large, and affecting record. Therefore, the configuration of the case of a cartridge did not go to the reason for calling it a simple cube type configuration, but turned into a complicated configuration, and it had the technical problem that it was hard to attach an ink bag to a cartridge.

[0006] This invention is made in view of the above-mentioned Prior art, and the main objects of this invention are to offer the ink stowage container which can ensure configuration maintenance of the ink bag arranged in this way while being able to position two or more ink bags in a cartridge easily, without complicating the configuration of a cartridge.

[0007]

[Means for Solving the Problem] In addition to four sides of the piled-up rectangle-like film of two sheets, the ink stowage container of this invention has two or more ink bags by which partition formation was carried out, and the plug part material attached in each of the ink bag concerned by welding one other than at least four sides so that the rectangle-like film concerned may be further divided in the shape of [ two or more ] a rectangle.

[0008] Partition formation may be carried out at two or more ink bags with which it filled up with the ink of two or more colors, such as yellow (Y), a Magenta (M), and cyanogen (C), and

partition formation of said ink stowage container may be carried out at the ink bag with which it filled up with ink, and the waste ink bag for collecting unnecessary ink.

[0009] Thus, since the adjoining part is the film by which joining was carried out and has connected each ink bag of each other, it can make each plug part material only able to engage with the case of a cartridge, and can attach a cartridge in an ink stowage container easily. Moreover, it is not necessary to establish a bridge wall for each ink bag to usually hold each ink bag in the case of a cartridge, since each other is regulated by the part (joining segment) with which each ink bag was connected, and the case of a simple cube type configuration can be adopted.

[0010] Furthermore, since an ink bag is certainly fixed to a cartridge, an installation hole is prepared between the ink bags (joining segment) with which said ink stowage container adjoins, and you may make it prepare the projection which engages with this installation hole at a cartridge side. Even if it does not prepare such a projection / installation hole, it is also possible to, fix a part for the ink bag part of an ink stowage container to the case body of a cartridge for example, using adhesive tape. However, in order that immobilization may also be [ to use an installation hole and engagement ] easier and the force may not act on the ink bag itself directly, even if the volume of an ink bag decreases with consumption of ink, since an ink bag deforms into Mr. front flesh-side 1, it can also make change of internal pressure small.

[0011] The manufacture approach of the ink stowage container of this invention is in the condition which inserted two or more plug part material into one side of the piled-up film of two sheets. The process which welds one side of the film concerned and attaches plug part material in a film, The film with which the plug part material concerned was attached is welded, after being filled up with the ink of the process which carries out partition formation of the ink bag for every plug part material, and a color which is mutually different into two or more ink bags concerned by which partition formation was carried out, the film of this edge is welded, and it is characterized by having the process which closes each ink bag.

[0012] If it does in this way, an ink stowage container will be filled up with the ink manufactured mostly at the coincidence term almost simultaneous. Even if saved without being used after this for a long period of time [ metaphor ], the condition of ink changes similarly. Therefore, although the color tone of the outputted image may be affected when color-printing, and comparatively new ink and old ink are used, according to this invention, such a thing cannot happen easily.

[0013]

[Embodiment of the Invention] (Ink cartridge) With reference to drawing 1 , the ink stowage container of this invention and 1 operation gestalt of an ink cartridge are explained hereafter. Drawing 1 is the decomposition perspective view of the ink cartridge of this invention, and drawing 2 is the fragmentary sectional view (a) of plug part material used as the ink output port of the ink stowage container built in the ink cartridge, and a perspective view (b).

[0014] As shown in these drawings, the ink cartridge 2 has the ink stowage container 6 which stored ink, and the cartridge case 30 which has contained this. The cartridge case 30 is equipped with the case body 40 (1st case piece) and the lid 50 (2nd case piece).

[0015] The case body 40 is equipped with the rectangular case bottom plate part 41 and the case outer frame part 42 which has stood up at the right angle from the periphery of the case bottom plate part 41 concerned. The ink bag 6 is contained by the crevice 43 of the rectangle in which partition formation is carried out by this case bottom plate part 41 and the case outer frame part 42. On the other hand, the lid 50 is formed in the configuration of the rectangle of the same

magnitude as the case body 40.

[0016] Next, the detail structure of each part of an ink cartridge 2 is explained. First, the ink stowage container 6 is formed from the flexible raw material, and aluminium foil is formed from the aluminum laminate film of a configuration of having put the film of two sheets, for example, an outside, with the nylon film, and having put the inside with the polyethylene film for improvement in gas barrier nature.

[0017] In the example of a graphic display, partition formation of the two ink bags 6A and 6B which became independent, respectively is carried out by piling up the aluminum laminate film of two sheets and joining those perimeters 601, 602, and 603 and center sections 604 by approaches, such as heat welding. These ink bags 6A and 6B by which partition formation was carried out are filled up with for example, black ink and red ink.

[0018] Two plug part material 62 used as the ink output port which derives the ink in each ink bag 6A and 6B outside is attached in the part 601 located in the side edge before an ink bag of those for the joint of the aluminum laminate film of two sheets shown with a slash in drawing 1 by approaches, such as heat welding.

[0019] The plug part material 62 can be used as a plastic part. The fixed slot 621 for fixing the ink stowage container 6 to a position to the case body 40 of a cartridge case 30 is formed in this plug part material 62 so that drawing 2 may show. This fixed slot 621 is annularly formed in the peripheral face of the plug part material 62, fits in with fitting section 42a formed in the case body 40 side, and is held. In this example, two fixed slots 621 are formed in the location corresponding to each ink output port of the ink bags 6A and 6B at the case body 40.

[0020] Each plug part material 62 is equipped with the output port rubber 624 which consists of elastic raw materials, such as rubber inserted in the tube part 622 which derives the ink in an ink bag, and the opening 623 of the major diameter formed at the head of this tube part 622, and ink is closed by the output port rubber 624 concerned. It has prevented that the thin film section 625 is arranged between a tube part 622 and output port rubber 624, ink contacts output port rubber 624 directly, output port rubber 624 is invaded by this, elution and the sludge of an impurity are generated, and poor printing occurs in a print head. Moreover, the plug part material 62 is equipped with the joint 626 of the boat form by which heat welding is put and carried out to the aluminum laminate film of two sheets in the back.

[0021] Next, the joint device between the case body 40 and a lid 50 is explained. The lid 50 is equipped with the hanging pawl 54 which was formed in the front end veranda and which is prolonged vertically, and the hanging pawl 55 of the couple which was formed in the both sides of the back end and which is similarly prolonged vertically. On the other hand, the case body 40 side is equipped with the hanging slot 46 as for which each hanging pawl 55 carries out a snap fitting from the inside as well as the hanging hole 45 in which each hanging pawl 54 carries out a snap fitting from the inside. therefore -- in order to attach a lid 50 in the case body 40 -- what is necessary is to insert the hanging pawl 54 in the hanging hole 45 at fitting and a degree, and just to insert the hanging pawl 55 in the hanging slot 46 first

[0022] At the ink cartridge of this example, the case body and lid which constitute the cartridge case are combined in the removable condition by the snap fitting. Therefore, at the time of recycle of an ink cartridge, since a lid can be removed easily, an ink stowage container is easily exchangeable.

[0023] Here, the guide holes 48b and 48c of the guide shaft for positioning at the time of equipping a printer with the ink cartridge 2 other than the above-mentioned hanging hole 45 and fitting section 42a are formed in the front end wall 48 in the case outer frame part 42 of the case

body 40.

[0024] Thus, since the adjoining part 604 is the film by which joining was carried out and has connected each ink bags 6A and 6B of each other, they can make each plug part material 62 only able to engage with the case 40 of a cartridge, and can attach the ink stowage container 6 in a cartridge easily. Moreover, it is not necessary to establish a bridge wall for each ink bag to usually hold each ink bag in the case of a cartridge, since each other is regulated by the part 604 (joining segment) with which each ink bag was connected, and the case of a simple cube type configuration can be adopted.

[0025] (The manufacture approach of an ink stowage container) With reference to drawing 5, the manufacture approach of the ink stowage container of this invention is explained hereafter. Drawing 5 is the explanatory view showing the manufacture process of an ink stowage container.

[0026] First, as shown in drawing 5 (a), the long picture-like aluminum laminate films 65 and 66 are attached in one side of the longitudinal direction of superposition and a film, and the plug part material 62 is attached at equal intervals. While setting the plug part material 62 among the films 65 and 66 by which the laminating was carried out and carrying out heat weld of the films 65 and 66 with non-illustrated heating apparatus by [ of a film ] carrying out predetermined width-of-face heating of 601 [ one-side ], heat welding of the plug part material 62 is carried out to both films. Here, sequential conveyance of the films 65 and 66 is carried out, and the plug part material 62 is inserted in the predetermined location between films, and if a manufacturing installation is arranged so that sequential heating of 1 side 601 of a film may be carried out, it can manufacture efficiently.

[0027] Next, as shown in drawing 5 (b), heat weld of the films 65 and 66 is carried out about the part 604 (602) of the middle between the plug part material 62 of the film with which plug part material was attached which adjoins the plug part material 62 in the vertical direction to 601 one side. Thereby, partition formation of the ink bags 6A and 6B is carried out for every plug part material. every [ then, ] ink stowage container -- (-- this example -- every two ink bags --) -- the middle of the part 602 by which joining was carried out is cut, and it separates into each ink stowage container.

[0028] After cutting separation is carried out, it fills up with black ink almost simultaneous [ red ink ] from edge 610B for every ink stowage container from edge 610A from which each ink bags 6A and 6B by which partition formation was carried out are released, the film of Edges 610A and 610B is welded after this, and each ink bag is sealed. The ink stowage container with which it filled up with ink is used equipping a cartridge case 30. In addition, after carrying out cutting separation of the ink stowage container, ink is filled up with this example, but after being filled up with ink, cutting separation may be carried out at each ink stowage container.

[0029] Moreover, in order to prevent that air bubbles are generated in the ink with which an ink bag is filled up, deaeration processing (heat-treatment) is performed to ink before filling up. Furthermore, the process filled up with ink is performed to the bottom of the ambient atmosphere which decompressed the ink stowage container. Therefore, the ink of a different color manufactured mostly at the coincidence term is simultaneously filled up with the same conditions.

[0030] In addition, although this example described the ink stowage container equipped with the ink bag of black and red 2 color, you may suit with the ink stowage container equipped with a total of seven ink bags with which it filled up with two every colors each not only of this but YMC ink in which saturation differs, and black ink.

[0031] Thus, the ink manufactured mostly at the coincidence term is simultaneously filled up

with this example into an ink stowage container. Even if saved without being used after this for a long period of time [ metaphor ], the condition of ink changes similarly. Therefore, although the color tone of the outputted image may be affected when color-printing, and comparatively new ink and old ink are used, in this invention, such a thing cannot happen easily.

[0032] (Another example of an ink cartridge) With reference to drawing 3 and drawing 4 , another example of the ink cartridge of this invention is explained hereafter. In addition, in order to simplify explanation, a sign attaches the same sign to the same thing as the example shown in drawing 1 , and omits explanation about the overlapping part.

[0033] Drawing 3 is the sectional view showing the ink cartridge of another example of this invention. Two or more snap stops 70 for fixing the ink stowage container 6 to the case bottom plate part 41 of the ink cartridge of the cartridge shown in drawing 1 further are formed in the cartridge shown in drawing 3 . On the other hand, the mounting hole 610 which engages with the snap stop 70 is established in the parts 602 and 604 to which joining of the ink stowage container 6 is carried out.

[0034] As for the ink stowage container 6, the parts 6A and 604 [ 602 and ] 6B to which joining of the plug part material 62 is carried out while being fixed to the fixed slot 621 by the side of a cartridge, i.e., ink bags, are fixed to a cartridge by this.

[0035] Even if it does not form such a snap stop, it is also possible to, fix a part for the ink bag part of an ink stowage container to the case body of a cartridge for example, using adhesive tape. However, in order that immobilization may also be [ to use a snap stop ] easier and the force may not act on the ink bag itself directly, even if the volume of an ink bag decreases with consumption of ink like this example, since an ink bag deforms into Mr. front flesh-side 1, it can also make change of internal pressure small.

[0036] Drawing 4 is the sectional view showing the ink cartridge of another example of this invention further. The cartridge shown in drawing 4 builds in the ink bag of (Yellow Y) (Magenta M) (cyanogen C) 3 color, and partition formation of the ink stowage container 6 is carried out respectively at the ink bags 6Y, 6M, and 6C with which it filled up with the ink of each color.

[0037] The mounting hole 610 is formed in the perimeter of the parts 602 and 604 to which joining of the ink stowage container 6 is carried out, i.e., each ink bag, and two or more snap stops 70 which engage with a mounting hole 610 are formed in the case outer frame part 42 of an ink cartridge. In addition, the fixed slot 621 for fixing the plug part material 62 like a precedent in addition to these snap stops 70 is formed also by this example, and the ink bag stowage container 6 is fixed to a cartridge by the snap stop 70 and the fixed slot 621.

[0038] According to this example, since the ink bags 6Y, 6M, and 6C are almost hung by the case body, the ink bags 6Y and 6M and 6C itself can lessen area which contacts so that a case body may not be contacted.

[0039] Therefore, when an ink stowage container is fixed to a cartridge body, even if the force which carries out a direct action to the ink bag itself can lessen and the volume of an ink bag decreases with consumption of ink, since an ink bag deforms into Mr. front flesh-side 1, it can also make change of internal pressure small.

[0040] In addition, although the example described above described what carried out partition formation of the ink bag with which the ink stowage container was filled up with the ink of three colors of black, the thing which carried out partition formation of the ink bag of red 2 color, yellow (Y), a Magenta (M), and cyanogen (C), partition formation of the ink bag of not only this but three colors or more may be carried out. Moreover, partition formation may be carried out at



the ink bag with which it filled up with ink, and the waste ink bag for collecting unnecessary ink. Here, unnecessary ink is the ink whose viscosity near the nozzle increased, and ink which air bubbles mixed, and is ink which was not able to be used for record. Such ink is collected from an ink jet head by the waste ink bag through a cap by driving the pump which prepared the exhaust passage which connects a wrap cap and a waste ink bag for the ink jet head other than the supply way which supplies ink to an ink jet head from an ink bag, for example, was formed in this exhaust passage.

[0041]

[Effect of the Invention] As stated above, while being able to position two or more ink bags in a cartridge easily according to this invention, without complicating the configuration of a cartridge, the effectiveness that the ink stowage container which can ensure configuration maintenance of the ink bag arranged in this way can be offered is done so.

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## TECHNICAL FIELD

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[Field of the Invention] Especially this invention relates to the stowage container which contains ink about an ink jet printer.

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## PRIOR ART

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[Description of the Prior Art] The ink jet recording device which forms a dot pattern is used for the sheet by making an ink droplet fly from two or more ink deliveries as one type of recording devices, such as a printer, facsimile, and a copy.

[0003] Generally the ink which is a record agent is supplied to an ink jet head through an ink supply pipe from the exchangeable ink cartridge set to the predetermined location of a recording apparatus. There are some which built the ink stowage container (ink bag) which sealed ink in the flexible bag which stuck the neighborhood of the laminate film which carried out the coat of the aluminum foil by resin etc. in such an ink cartridge. (For example, JP,63-35346,A)

In this case, it is constituted so that the ink in an ink bag may be supplied to an ink jet head through the ink supply way which plug part material penetrates a mounting eclipse and this plug part material in the state of closure to an ink bag, for example, is formed with a hollow needle etc.

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## EFFECT OF THE INVENTION

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[Effect of the Invention] As stated above, while being able to position two or more ink bags in a cartridge easily according to this invention, without complicating the configuration of a cartridge, the effectiveness that the ink stowage container which can ensure configuration maintenance of the ink bag arranged in this way can be offered is done so.

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## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, the technical problem was in the following points at such an ink stowage container. In the ink jet recording device which records a full color image, the ink bag with which it filled up with color ink, such as yellow, a Magenta, and cyanogen, was respectively built in the cartridge according to individual for every color. In this

case, in order to have to provide for a printer side the tooth space in which only the number of cartridges holds a cartridge, it is disadvantageous at the point which miniaturizes a printer.

[0005] On the other hand, when these ink bags were collectively built in one cartridge, the bridge wall was established in the cartridge and each ink bag was contained with the position position for every chamber into which it was usually divided within the case of a cartridge. (For example, it is shown in drawing 5 of JP,63-35346,A.) If this is faced carrying out receipt maintenance of the flexible ink bag into the case of KATORIJI and positioning and configuration maintenance of this ink bag are not ensured, it is because there is a possibility of the internal pressure change in an ink bag becoming large, and affecting record. Therefore, the configuration of the case of a cartridge did not go to the reason for calling it a simple cube type configuration, but turned into a complicated configuration, and it had the technical problem that it was hard to attach an ink bag to a cartridge.

[0006] This invention is made in view of the above-mentioned Prior art, and the main objects of this invention are to offer the ink stowage container which can ensure configuration maintenance of the ink bag arranged in this way while being able to position two or more ink bags in a cartridge easily, without complicating the configuration of a cartridge.

## MEANS

[Means for Solving the Problem] In addition to four sides of the piled-up rectangle-like film of two sheets, the ink stowage container of this invention has two or more ink bags by which partition formation was carried out, and the plug part material attached in each of the ink bag concerned by welding one other than at least four sides so that the rectangle-like film concerned may be further divided in the shape of [ two or more ] a rectangle.

[0008] Partition formation may be carried out at two or more ink bags with which it filled up with the ink of two or more colors, such as yellow (Y), a Magenta (M), and cyanogen (C), and partition formation of said ink stowage container may be carried out at the ink bag with which it filled up with ink, and the waste ink bag for collecting unnecessary ink.

[0009] Thus, since the adjoining part is the film by which joining was carried out and has connected each ink bag of each other, it can make each plug part material only able to engage with the case of a cartridge, and can attach a cartridge in an ink stowage container easily. Moreover, it is not necessary to establish a bridge wall for each ink bag to usually hold each ink bag in the case of a cartridge, since each other is regulated by the part (joining segment) with which each ink bag was connected, and the case of a simple cube type configuration can be adopted.

[0010] Furthermore, since an ink bag is certainly fixed to a cartridge, an installation hole is prepared between the ink bags (joining segment) with which said ink stowage container adjoins, and you may make it prepare the projection which engages with this installation hole at a cartridge side. Even if it does not prepare such a projection / installation hole, it is also possible to, fix a part for the ink bag part of an ink stowage container to the case body of a cartridge for example, using adhesive tape. However, in order that immobilization may also be [ to use an installation hole and engagement ] easier and the force may not act on the ink bag itself directly, even if the volume of an ink bag decreases with consumption of ink, since an ink bag deforms into Mr. front flesh-side 1, it can also make change of internal pressure small.

[0011] The manufacture approach of the ink stowage container of this invention is in the condition which inserted two or more plug part material into one side of the piled-up film of two

sheets. The process which welds one side of the film concerned and attaches plug part material in a film, The film with which the plug part material concerned was attached is welded, after being filled up with the ink of the process which carries out partition formation of the ink bag for every plug part material, and a color which is mutually different into two or more ink bags concerned by which partition formation was carried out, the film of this edge is welded, and it is characterized by having the process which closes each ink bag.

[0012] If it does in this way, an ink stowage container will be filled up with the ink manufactured mostly at the coincidence term almost simultaneous. Even if saved without being used after this for a long period of time [ metaphor ], the condition of ink changes similarly. Therefore, although the color tone of the outputted image may be affected when color-printing, and comparatively new ink and old ink are used, according to this invention, such a thing cannot happen easily.

[0013]

[Embodiment of the Invention] (Ink cartridge) With reference to drawing 1 , the ink stowage container of this invention and 1 operation gestalt of an ink cartridge are explained hereafter. Drawing 1 is the decomposition perspective view of the ink cartridge of this invention, and drawing 2 is the fragmentary sectional view (a) of plug part material used as the ink output port of the ink stowage container built in the ink cartridge, and a perspective view (b).

[0014] As shown in these drawings, the ink cartridge 2 has the ink stowage container 6 which stored ink, and the cartridge case 30 which has contained this. The cartridge case 30 is equipped with the case body 40 (1st case piece) and the lid 50 (2nd case piece).

[0015] The case body 40 is equipped with the rectangular case bottom plate part 41 and the case outer frame part 42 which has stood up at the right angle from the periphery of the case bottom plate part 41 concerned. The ink bag 6 is contained by the crevice 43 of the rectangle in which partition formation is carried out by this case bottom plate part 41 and the case outer frame part 42. On the other hand, the lid 50 is formed in the configuration of the rectangle of the same magnitude as the case body 40.

[0016] Next, the detail structure of each part of an ink cartridge 2 is explained. First, the ink stowage container 6 is formed from the flexible raw material, and aluminium foil is formed from the aluminum laminate film of a configuration of having put the film of two sheets, for example, an outside, with the nylon film, and having put the inside with the polyethylene film for improvement in gas barrier nature.

[0017] In the example of a graphic display, partition formation of the two ink bags 6A and 6B which became independent, respectively is carried out by piling up the aluminum laminate film of two sheets and joining those perimeters 601, 602, and 603 and center sections 604 by approaches, such as heat welding. These ink bags 6A and 6B by which partition formation was carried out are filled up with for example, black ink and red ink.

[0018] Two plug part material 62 used as the ink output port which derives the ink in each ink bag 6A and 6B outside is attached in the part 601 located in the side edge before an ink bag of those for the joint of the aluminum laminate film of two sheets shown with a slash in drawing 1 by approaches, such as heat welding.

[0019] The plug part material 62 can be used as a plastic part. The fixed slot 621 for fixing the ink stowage container 6 to a position to the case body 40 of a cartridge case 30 is formed in this plug part material 62 so that drawing 2 may show. This fixed slot 621 is annularly formed in the peripheral face of the plug part material 62, fits in with fitting section 42a formed in the case body 40 side, and is held. In this example, two fixed slots 621 are formed in the location

corresponding to each ink output port of the ink bags 6A and 6B at the case body 40.

[0020] Each plug part material 62 is equipped with the output port rubber 624 which consists of elastic raw materials, such as rubber inserted in the tube part 622 which derives the ink in an ink bag, and the opening 623 of the major diameter formed at the head of this tube part 622, and ink is closed by the output port rubber 624 concerned. It has prevented that the thin film section 625 is arranged between a tube part 622 and output port rubber 624, ink contacts output port rubber 624 directly, output port rubber 624 is invaded by this, elution and the sludge of an impurity are generated, and poor printing occurs in a print head. Moreover, the plug part material 62 is equipped with the joint 626 of the boat form by which heat welding is put and carried out to the aluminum laminate film of two sheets in the back.

[0021] Next, the joint device between the case body 40 and a lid 50 is explained. The lid 50 is equipped with the hanging pawl 54 which was formed in the front end veranda and which is prolonged vertically, and the hanging pawl 55 of the couple which was formed in the both sides of the back end and which is similarly prolonged vertically. On the other hand, the case body 40 side is equipped with the hanging slot 46 as for which each hanging pawl 55 carries out a snap fitting from the inside as well as the hanging hole 45 in which each hanging pawl 54 carries out a snap fitting from the inside. therefore -- in order to attach a lid 50 in the case body 40 -- what is necessary is to insert the hanging pawl 54 in the hanging hole 45 at fitting and a degree, and just to insert the hanging pawl 55 in the hanging slot 46 first

[0022] At the ink cartridge of this example, the case body and lid which constitute the cartridge case are combined in the removable condition by the snap fitting. Therefore, at the time of recycle of an ink cartridge, since a lid can be removed easily, an ink stowage container is easily exchangeable.

[0023] Here, the guide holes 48b and 48c of the guide shaft for positioning at the time of equipping a printer with the ink cartridge 2 other than the above-mentioned hanging hole 45 and fitting section 42a are formed in the front end wall 48 in the case outer frame part 42 of the case body 40.

[0024] Thus, since the adjoining part 604 is the film by which joining was carried out and has connected each ink bags 6A and 6B of each other, they can make each plug part material 62 only able to engage with the case 40 of a cartridge, and can attach the ink stowage container 6 in a cartridge easily. Moreover, it is not necessary to establish a bridge wall for each ink bag to usually hold each ink bag in the case of a cartridge, since each other is regulated by the part 604 (joining segment) with which each ink bag was connected, and the case of a simple cube type configuration can be adopted.

[0025] (The manufacture approach of an ink stowage container) With reference to drawing 5, the manufacture approach of the ink stowage container of this invention is explained hereafter. Drawing 5 is the explanatory view showing the manufacture process of an ink stowage container.

[0026] First, as shown in drawing 5 (a), the long picture-like aluminum laminate films 65 and 66 are attached in one side of the longitudinal direction of superposition and a film, and the plug part material 62 is attached at equal intervals. While setting the plug part material 62 among the films 65 and 66 by which the laminating was carried out and carrying out heat weld of the films 65 and 66 with non-illustrated heating apparatus by [ of a film ] carrying out predetermined width-of-face heating of 601 [ one-side ], heat welding of the plug part material 62 is carried out to both films. Here, sequential conveyance of the films 65 and 66 is carried out, and the plug part material 62 is inserted in the predetermined location between films, and if a manufacturing installation is arranged so that sequential heating of 1 side 601 of a film may be carried out, it

can manufacture efficiently.

[0027] Next, as shown in drawing 5 (b), heat weld of the films 65 and 66 is carried out about the part 604 (602) of the middle between the plug part material 62 of the film with which plug part material was attached which adjoins the plug part material 62 in the vertical direction to 601 one side. Thereby, partition formation of the ink bags 6A and 6B is carried out for every plug part material. every [ then, ] ink stowage container -- (-- this example -- every two ink bags --) -- the middle of the part 602 by which joining was carried out is cut, and it separates into each ink stowage container.

[0028] After cutting separation is carried out, it fills up with black ink almost simultaneous [ red ink ] from edge 610B for every ink stowage container from edge 610A from which each ink bags 6A and 6B by which partition formation was carried out are released, the film of Edges 610A and 610B is welded after this, and each ink bag is sealed. The ink stowage container with which it filled up with ink is used equipping a cartridge case 30. In addition, after carrying out cutting separation of the ink stowage container, ink is filled up with this example, but after being filled up with ink, cutting separation may be carried out at each ink stowage container.

[0029] Moreover, in order to prevent that air bubbles are generated in the ink with which an ink bag is filled up, deaeration processing (heat-treatment) is performed to ink before filling up. Furthermore, the process filled up with ink is performed to the bottom of the ambient atmosphere which decompressed the ink stowage container. Therefore, the ink of a different color manufactured mostly at the coincidence term is simultaneously filled up with the same conditions.

[0030] In addition, although this example described the ink stowage container equipped with the ink bag of black and red 2 color, you may suit with the ink stowage container equipped with a total of seven ink bags with which it filled up with two every colors each not only of this but YMC ink in which saturation differs, and black ink.

[0031] Thus, the ink manufactured mostly at the coincidence term is simultaneously filled up with this example into an ink stowage container. Even if saved without being used after this for a long period of time [ metaphor ], the condition of ink changes similarly. Therefore, although the color tone of the outputted image may be affected when color-printing, and comparatively new ink and old ink are used, in this invention, such a thing cannot happen easily.

[0032] (Another example of an ink cartridge) With reference to drawing 3 and drawing 4 , another example of the ink cartridge of this invention is explained hereafter. In addition, in order to simplify explanation, a sign attaches the same sign to the same thing as the example shown in drawing 1 , and omits explanation about the overlapping part.

[0033] Drawing 3 is the sectional view showing the ink cartridge of another example of this invention. Two or more snap stops 70 for fixing the ink stowage container 6 to the case bottom plate part 41 of the ink cartridge of the cartridge shown in drawing 1 further are formed in the cartridge shown in drawing 3 . On the other hand, the mounting hole 610 which engages with the snap stop 70 is established in the parts 602 and 604 to which joining of the ink stowage container 6 is carried out.

[0034] As for the ink stowage container 6, the parts 6A and 604 [ 602 and ] 6B to which joining of the plug part material 62 is carried out while being fixed to the fixed slot 621 by the side of a cartridge, i.e., ink bags, are fixed to a cartridge by this.

[0035] Even if it does not form such a snap stop, it is also possible to, fix a part for the ink bag part of an ink stowage container to the case body of a cartridge for example, using adhesive tape. However, in order that immobilization may also be [ to use a snap stop ] easier and the force may

not act on the ink bag itself directly, even if the volume of an ink bag decreases with consumption of ink like this example, since an ink bag deforms into Mr. front flesh-side 1, it can also make change of internal pressure small.

[0036] Drawing 4 is the sectional view showing the ink cartridge of another example of this invention further. The cartridge shown in drawing 4 builds in the ink bag of (Yellow Y) (Magenta M) (cyanogen C) 3 color, and partition formation of the ink stowage container 6 is carried out respectively at the ink bags 6Y, 6M, and 6C with which it filled up with the ink of each color.

[0037] The mounting hole 610 is formed in the perimeter of the parts 602 and 604 to which joining of the ink stowage container 6 is carried out, i.e., each ink bag, and two or more snap stops 70 which engage with a mounting hole 610 are formed in the case outer frame part 42 of an ink cartridge. In addition, the fixed slot 621 for fixing the plug part material 62 like a precedent in addition to these snap stops 70 is formed also by this example, and the ink bag stowage container 6 is fixed to a cartridge by the snap stop 70 and the fixed slot 621.

[0038] According to this example, since the ink bags 6Y, 6M, and 6C are almost hung by the case body, the ink bags 6Y and 6M and 6C itself can lessen area which contacts so that a case body may not be contacted.

[0039] Therefore, when an ink stowage container is fixed to a cartridge body, even if the force which carries out a direct action to the ink bag itself can lessen and the volume of an ink bag decreases with consumption of ink, since an ink bag deforms into Mr. front flesh-side 1, it can also make change of internal pressure small.

[0040] In addition, although the example described above described what carried out partition formation of the ink bag with which the ink stowage container was filled up with the ink of three colors of black, the thing which carried out partition formation of the ink bag of red 2 color, yellow (Y), a Magenta (M), and cyanogen (C), partition formation of the ink bag of not only this but three colors or more may be carried out. Moreover, partition formation may be carried out at the ink bag with which it filled up with ink, and the waste ink bag for collecting unnecessary ink. Here, unnecessary ink is the ink whose viscosity near the nozzle increased, and ink which air bubbles mixed, and is ink which was not able to be used for record. Such ink is collected from an ink jet head by the waste ink bag through a cap by driving the pump which prepared the exhaust passage which connects a wrap cap and a waste ink bag for the ink jet head other than the supply way which supplies ink to an ink jet head from an ink bag, for example, was formed in this exhaust passage.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the decomposition perspective view of the ink cartridge equipped with the ink stowage container of this invention.

[Drawing 2] The fragmentary sectional view of plug part material where (a) becomes ink output port of the ink stowage container shown in drawing 1, and (b) are the perspective views of the plug part material used as the ink output port of the ink stowage container shown in drawing 1.

[Drawing 3] It is the sectional view showing the ink cartridge of another example of this invention.

[Drawing 4] It is the sectional view showing the ink cartridge of another example of this invention.

[Drawing 5] Drawing showing the condition after (a) welds one side of an aluminum laminate film and attaches the plug part material in the manufacture process of the ink stowage container of this invention, and (b) are drawings showing the condition after carrying out partition formation of the ink bag 6 for every plug part material in the manufacture process of the ink stowage container of this invention.

[Description of Notations]

2 Ink Cartridge  
6A, 6B Ink bag  
6Y, 6M, 6C Ink bag  
6 Ink Stowage Container  
30 Cartridge Case  
40 Case Body  
41 Case Bottom Plate Part  
42 Case Outer Frame Part  
43 Crevice  
45 Hanging Hole  
46 Hanging Slot  
48 Front End Wall  
50 Lid  
54 Hanging Pawl  
55 Hanging Pawl  
62 Plug Part Material  
65 Aluminum Laminate Film  
70 Snap Stop  
610 Mounting Hole  
621 Fixed Slot

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[Translation done.]